

108TH CONGRESS
2D SESSION

H. R. 4880

To improve the quality, efficiency, standards, and technology of health care,
and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

JULY 21, 2004

Mr. KENNEDY of Rhode Island introduced the following bill; which was referred to the Committee on Energy and Commerce, and in addition to the Committee on Ways and Means, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

A BILL

To improve the quality, efficiency, standards, and technology
of health care, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Josie King Act of
5 2004” or the “Quality, Efficiency, Standards, and Tech-
6 nology for Health Care Transformation Act of 2004”.

7 **SEC. 2. DEFINITION.**

8 For purposes of this Act, the term “Secretary”
9 means the Secretary of Health and Human Services.

1 SEC. 3. TABLE OF CONTENTS.

2 The table of contents for this Act is as follows:

- Sec. 1. Short title.
- Sec. 2. Definition.
- Sec. 3. Table of contents.

TITLE I—NATIONAL HEALTH INFORMATION INFRASTRUCTURE

- Sec. 101. Purpose.
- Sec. 102. Health information technology grants.
- Sec. 103. Standards for interoperability of health information technology systems.
- Sec. 104. Loans.
- Sec. 105. Safe harbor for equipment and services provided for the development or implementation of a health information infrastructure.
- Sec. 106. Exception to medicare limitations on physician self-referral.
- Sec. 107. Adjustments to medicare payments to providers of service and suppliers participating in health information exchanges.
- Sec. 108. Medicaid payments for information infrastructure for health information exchange and information technology.
- Sec. 109. Definitions.

TITLE II—HEALTH CARE OUTCOMES, BEST PRACTICES, AND EFFICIENCY

- Sec. 201. Research on Outcomes of Health Care Items and Services.
- Sec. 202. Consortium for Health Outcomes Research Priorities.
- Sec. 203. Center for Clinical Decision-Support Technology.
- Sec. 204. Scholarships for study in health care quality and patient safety.
- Sec. 205. Standardized measures of health care provider performance.
- Sec. 206. Definitions.

TITLE III—INCENTIVES FOR HEALTH CARE QUALITY

- Sec. 301. Access to medicare health care claims databases.
- Sec. 302. Incorporation of measures of health care practitioner performance in Federal programs.
- Sec. 303. Interim claims-based practitioner performance database.
- Sec. 304. Clinical-based practitioner performance database.
- Sec. 305. Availability of performance measurements and data.
- Sec. 306. Use of health care provider performances measure for pay for performance.
- Sec. 307. Study comparing practitioner performance database.
- Sec. 308. Regulations on auditing.
- Sec. 309. AHRQ access to practitioner performance databases.

1 **TITLE I—NATIONAL HEALTH IN-**
2 **FORMATION INFRASTRUC-**
3 **TURE**

4 **SEC. 101. PURPOSE.**

5 The Secretary of Health and Human Services shall
6 implement this title with a view to developing a national
7 health information infrastructure.

8 **SEC. 102. HEALTH INFORMATION TECHNOLOGY GRANTS.**

9 (a) PHASE I GRANTS.—

10 (1) GRANTS.—The Secretary may make not
11 more than 20 grants to health information infra-
12 structure organizations to enable each grantee to de-
13 velop and implement over a 4-year period a commu-
14 nity health information technology plan that pro-
15 vides for a health information exchange to serve a
16 geographic area in 1 or more States.

17 (2) USE OF FUNDS.—The Secretary may not
18 make a grant to a health information infrastructure
19 organization under this section unless the organiza-
20 tion agrees to use the grant—

21 (A) in the first year of the grant, to de-
22 velop a community health information tech-
23 nology plan described in paragraph (3) for sub-
24 mission to the Secretary under paragraph (4);
25 and

(B) in each year of the grant, but not later than the second year of the grant, to implement a health information infrastructure, including a health information exchange, in accordance with the plan.

(3) COMMUNITY HEALTH INFORMATION TECHNOLOGY PLAN.—

(A) IN GENERAL.—A community health information technology plan shall provide for the establishment and implementation in a specified geographic area of a health information infrastructure that—

(i) includes a health information exchange that allows the seamless, secure, electronic sharing of health information among health care providers and other authorized users;

(ii) provides consumers with secure, electronic access to their own health information;

(iii) meets data standards for interoperability adopted by the Secretary, including any standards providing for interoperability among health information exchanges;

1 (iv) meets the privacy requirements of
2 subsection (d);

3 (v) provides such public health surveil-
4 lance and reporting capability as the Sec-
5 retary requires;

6 (vi) allows for such reporting of, and
7 access to, health information for purposes
8 of research (other than individually identi-
9 fiable health information) as the Secretary
10 requires; and

11 (vii) allows for the reporting of health
12 information (other than individually identi-
13 fiable health information) to the database
14 established under section 304 for the pur-
15 pose of health care provider performance
16 measurement in such form as required by
17 the Secretary.

18 (B) CONTENTS.—A community health in-
19 formation technology plan shall—

20 (i) be developed with the participation
21 and widespread support of the health care
22 community, including all stakeholders (in-
23 cluding small physician groups), of the ge-
24 ographic area to be served by the grantee's
25 health information exchange;

1 (ii) describe the technologies and sys-
2 tems, including interoperability data stand-
3 ards, that will be used to establish a health
4 information exchange consistent with para-
5 graph (A)(i) and the technological require-
6 ments and support that will be necessary
7 for health care providers to participate in
8 the health information exchange;

9 (iii) establish how health care stake-
10 holders will share the costs of health infor-
11 mation technology investments required by
12 the community health information tech-
13 nology plan, including the costs of imple-
14 menting and maintaining new systems in
15 physicians offices, hospitals, laboratories,
16 community health centers, pharmacies, and
17 other facilities of health care providers;

18 (iv) establish how administrative and
19 clinical savings resulting from widespread
20 use of new health information technology
21 will be accounted for and distributed
22 among health care stakeholders;

23 (v) explain how the health information
24 infrastructure organization involved will
25 ensure widespread participation by health

1 care providers (especially small physician
2 groups) in the grantee's health information
3 exchange and what support and assistance
4 will be available to physicians seeking to
5 integrate health information technologies
6 into their practices;

7 (vi) describe how patients and care-
8 givers who are not health care providers
9 will be able to access and utilize the health
10 information infrastructure;

11 (vii) establish how the health informa-
12 tion infrastructure will be sustained over
13 time, including anticipated sources of rev-
14 enue;

15 (viii) explain how the grantee's health
16 information exchange will protect patient
17 privacy and maintain security;

18 (ix) explain how the grantee will en-
19 sure the participation of health care pro-
20 viders serving minority communities, in-
21 cluding communities in which English is
22 not the primary language spoken; and

23 (x) require that the grantee's health
24 information exchange is certified by the
25 Secretary under this section.

1 (4) APPROVAL OF PLAN.—

2 (A) SUBMISSION.—Not later than the end
3 of the first year for which a health information
4 infrastructure organization receives a grant
5 under this subsection, the organization shall
6 submit its community health information tech-
7 nology plan to the Secretary.

8 (B) APPROVAL.—The Secretary shall ap-
9 prove or disapprove each community health in-
10 formation technology plan submitted to the Sec-
11 retary under this paragraph based on whether
12 the plan complies with the requirements of this
13 subsection.

14 (C) EFFECT OF FAILURE TO APPROVE.—
15 The Secretary may not make any payment
16 under this subsection to a health information
17 infrastructure organization for the second,
18 third, or fourth year for which the organization
19 receives a grant unless the Secretary has ap-
20 proved the organization's community health in-
21 formation technology plan.

22 (5) SELECTION.—In selecting grant recipients
23 under this section, the Secretary shall take into ac-
24 count the extent to which an applicant intends to de-
25 velop a community health information technology

1 plan that covers a complete medical market area (as
2 defined by the Secretary), geographical diversity, ex-
3 tent of stakeholder participation, health care pro-
4 vider participation commitments, capacity to meas-
5 ure quality and efficiency improvements, and
6 replicability.

7 (b) PHASE II GRANTS.—

8 (1) GRANTS.—For the purpose described in
9 paragraph (2), the Secretary shall make a grant
10 under this subsection to each State that agrees to
11 comply with the requirements of this subsection.

12 (2) PURPOSE.—A funding agreement for a
13 grant under this subsection is that the State in-
14 volved will use the grant only for making subgrants
15 to health information infrastructure organizations
16 for the purpose of—

17 (A) maintaining and upgrading existing
18 health information exchanges;

19 (B) replicating existing health information
20 exchanges to develop and implement new health
21 information exchanges in areas not previously
22 served by an exchange in accordance with the
23 process and requirements described in sub-
24 section (a);

1 (C) including additional stakeholders in the
2 health information exchanges;

3 (D) working with entities in neighboring
4 States to expand health information exchanges
5 on a regional basis; and

6 (E) connecting health information ex-
7 changes with public health and bioterrorism
8 surveillance programs, including those of the
9 Centers for Disease Control and Prevention.

10 (3) PRIVACY.—A funding agreement for a grant
11 under this subsection is that the State involved must
12 require that any infrastructure funded in whole or in
13 part under this subsection must meet the privacy re-
14 quirements of subsection (d).

15 (4) CERTIFICATION.—A funding agreement for
16 a grant under this subsection is that the State in-
17 volved will require that each health information ex-
18 change funded with the grant is certified by the Sec-
19 retary under this section.

20 (5) REPORTS.—A funding agreement for a
21 grant under this subsection is that the State in-
22 volved will submit an annual report to the Secretary
23 on the activities of the State under this subsection,
24 including—

1 (A) the status of existing health informa-
2 tion exchanges in the State; and

3 (B) the development and implementation
4 of new health information exchanges in the
5 State in areas not previously served by an ex-
6 change.

7 (6) ALLOCATION OF FUNDS.—Of the amount
8 appropriated for each fiscal year to carry out this
9 subsection, the Secretary shall use such appropriated
10 amount to award a grant to each State receiving a
11 grant under this subsection in an amount that bears
12 the same relation to the appropriated amount as the
13 number of physicians and hospitals in the State
14 bears to the total number of physicians and hos-
15 pitals in all such States.

16 (c) PHASE III GRANTS.—The Secretary shall con-
17 tinue to make grants to States in accordance with the pro-
18 visions of subsection (b), except that—

19 (1) grants under this subsection shall be used
20 primarily to maintain or upgrade existing health in-
21 formation exchanges; and

22 (2) the Secretary may not make a grant to a
23 State under this subsection if less than 75 percent
24 of the health care providers in the State are partici-
25 pating in a health information exchange.

1 (d) PRIVACY.—Any health information infrastructure
2 funded in whole or in part under this section shall—

3 (1) comply with the regulations promulgated
4 pursuant to section 264(c) of the Health Insurance
5 Portability and Accountability Act of 1996 (42
6 U.S.C. 1320d–2(d));

7 (2) allow patients to exclude their health infor-
8 mation from the health information exchange;

9 (3) give patients the option of allowing only
10 designated health care providers to access their per-
11 sonally identifiable information concerning diagnosis
12 and treatment of sexually transmitted diseases, ad-
13 diction, and mental illnesses;

14 (4) allow health care providers to access individ-
15 ually identifiable health information through health
16 information exchanges only for reasonable purposes
17 related to diagnosis and treatment;

18 (5) allow other persons to access individually
19 identifiable health information available through
20 health information exchanges only with express pa-
21 tient consent; and

22 (6) require health care providers, in making a
23 transmission of individually identifiable health infor-
24 mation to payers through the health information in-
25 frastructure, to restrict the transmission to the min-

1 imum amount of information necessary for payment
2 of the claim involved.

3 (e) APPLICATION.—To seek a grant under this sec-
4 tion, an applicant shall submit an application to the Sec-
5 retary in such form, in such manner, and containing such
6 information and assurances as the Secretary may require.

7 (f) TECHNICAL ASSISTANCE.—

8 (1) IN GENERAL.—The Secretary shall provide
9 to health information infrastructure organizations
10 such technical assistance as the Secretary deems ap-
11 propriate to carry out this section, including assist-
12 ance relating to questions of governance, financing,
13 and technological approaches to the creation of
14 health information infrastructure.

15 (2) NATIONAL TECHNICAL ASSISTANCE CEN-
16 TER.—

17 (A) ESTABLISHMENT.—The Director of
18 the Agency for Healthcare Resources and Qual-
19 ity shall establish and maintain a national tech-
20 nical assistance center to provide assistance to
21 physicians described in subparagraph (B) to fa-
22 cilitate successful adoption of health informa-
23 tion technologies and participation in the devel-
24 opment and implementation of community

1 health information technology plans by such
2 physicians.

3 (B) PHYSICIANS.—The national technical
4 assistance center shall provide assistance to
5 physicians in geographical areas served by a
6 health information infrastructure organization
7 with a phase I grant under subsection (a).

8 (C) PRIORITY.—In providing assistance to
9 physicians under this paragraph, the national
10 technical assistance centers shall—

11 (i) give priority to physicians in small
12 physician groups; and

13 (ii) as resources allow, provide assist-
14 ance to physicians in larger groups.

15 (D) REQUIREMENTS.—Technical assist-
16 ance provided under this paragraph shall, at a
17 minimum, include the following:

18 (i) A clearinghouse of best practices,
19 guidelines, and implementation strategies
20 directed at the small medical practices that
21 plan to adopt electronic medical records
22 and other health information technologies.

23 (ii) A change management tool kit to
24 enable physicians and their office staffs to
25 successfully prepare practice workflows for

1 electronic medical record adoption, to re-
2 ceive guidance in the selection of vendors
3 of health information technology products
4 and services that are appropriate within
5 the context of the individual practice and
6 the community setting, to implement
7 health information technology solutions
8 and manage the project at the practice
9 level, and to address the ongoing need for
10 upgrades, maintenance, and security of of-
11 fice-based health information technologies.

12 (iii) The capability to provide con-
13 sultations and advice to small medical
14 practices to facilitate adoption of health in-
15 formation technologies.

16 (g) CERTIFICATION.—Not later than the date that is
17 1 year after the date of the enactment of this Act, the
18 Secretary shall establish a program of certifying health in-
19 formation infrastructures that are in compliance with the
20 requirements of subsection (a)(3)(A) and any other re-
21 quirements of the national health information infrastruc-
22 ture as established by the Secretary.

23 (h) AUTHORIZATION OF APPROPRIATIONS.—

1 (1) IN GENERAL.—To carry out the provisions
2 of this section other than subsection (f)(2), there are
3 authorized to be appropriated—

4 (A) for phase I grants under subsection
5 (a), \$55,000,000 for fiscal year 2005 and
6 \$167,000,000 for each of fiscal years 2006,
7 2007, and 2008;

8 (B) for phase II grants under subsection
9 (b), \$400,000,000 for each of fiscal years 2009
10 through 2013; and

11 (C) for phase III grants under subsection
12 (c), such sums as may be necessary for fiscal
13 year 2014 and each subsequent fiscal year.

14 (2) TECHNICAL ASSISTANCE.—

15 (A) IN GENERAL.—Of the amount appro-
16 priated to carry out this section for a fiscal
17 year, not more than than 10 percent of such
18 amount or \$5,000,000, whichever is lesser, may
19 be used to provide technical assistance under
20 subsection (f)(1).

21 (B) NATIONAL TECHNICAL ASSISTANCE
22 CENTER.—To carry out subsection (f)(2), there
23 is authorized to be appropriated \$2,500,000 for
24 each of fiscal years 2005 through 2008.

1 **SEC. 103. STANDARDS FOR INTEROPERABILITY OF HEALTH**
2 **INFORMATION TECHNOLOGY SYSTEMS.**

3 (a) STANDARDS.—Not later than 1 year after the
4 date of the enactment of this Act, after considering the
5 recommendations of the Working Group, the Secretary of
6 Health and Human Services, the Secretary of Defense,
7 and the Secretary of Veterans Affairs, acting jointly, shall
8 adopt data standards for the interoperability of health in-
9 formation technology systems.

10 (b) PERIODIC REVIEW.—The Secretary of Health
11 and Human Services, the Secretary of Defense, and the
12 Secretary of Veterans Affairs, acting jointly, shall periodi-
13 cally review the data standards adopted under subsection
14 (a) and, as appropriate, revise such standards.

15 (c) APPLICATION.—The Secretary of Health and
16 Human Services, the Secretary of Defense, and the Sec-
17 retary of Veterans Affairs shall require that each program
18 using health information technology of the Department of
19 Health and Human Services, the Department of Defense,
20 and the Department of Veterans Affairs, respectively,
21 complies with the data standards adopted under sub-
22 section (a).

23 (d) WORKING GROUP.—

24 (1) ESTABLISHMENT.—The Secretary of Health
25 and Human Services shall convene a Working Group
26 to formulate recommendations on the adoption of

1 data standards for the interoperability of health in-
2 formation technology systems.

3 (2) MEMBERSHIP.—The members of the Work-
4 ing Group shall include the following:

5 (A) Health informatics experts from the
6 Department of Defense, the Department of
7 Health and Humans Services, the Department
8 of Veterans Affairs, the Indian Health Service,
9 and the private sector.

10 (B) Practicing physicians.

11 (C) Nurses.

12 (D) Representatives of other health care
13 providers.

14 (E) Hospital administrators and hospital
15 chief information officers.

16 (F) Representatives of standards develop-
17 ment organizations.

18 (G) Representatives of standards develop-
19 ment organizations.

20 (H) Representatives of the Agency for
21 Healthcare Research and Quality.

22 (I) Representatives of the National Library
23 of Medicine.

24 (J) Other individuals, as determined ap-
25 propriate by the Secretary, with expertise rel-

1 evant to recommending data standards for the
2 interoperability of health information tech-
3 nology systems.

4 (3) DUTIES.—The Working Group shall formu-
5 late recommendations to the Secretary of Health
6 and Human Services, the Secretary of Defense, and
7 the Secretary of Veterans Affairs on the adoption of
8 data standards for the interoperability of health in-
9 formation technology systems, including rec-
10 ommendations on standards for each of the fol-
11 lowing:

12 (A) Components of electronic medical
13 records.

14 (B) Interchange of clinical data, including,
15 with a patient’s consent, the sharing of patient
16 data—

17 (i) across health care provider and
18 community boundaries; and

19 (ii) between health care providers and
20 patients.

21 (C) Terminologies.

22 (D) Medical knowledge representation.

23 (E) Computerized physician order entry.

24 (F) Privacy, security, and authentication
25 of health information.

1 (e) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to carry out this sec-
3 tion—

4 (1) \$5,000,000 for each of fiscal years 2005
5 and 2006; and

6 (2) \$2,000,000 for fiscal year 2007 and each
7 subsequent fiscal year.

8 **SEC. 104. LOANS.**

9 (a) IN GENERAL.—The Secretary may make loans to
10 health information infrastructure organizations that re-
11 ceive a phase I grant under section 102(a) or a phase II
12 subgrant under section 102(b) to provide additional fund-
13 ing for activities under the grant, including funding for
14 the costs of—

15 (1) developing a community health information
16 technology plan under section 102(a)(3); and

17 (2) implementing technology investments, train-
18 ing, and workflow reengineering under the plan.

19 (b) TERMS AND CONDITIONS.—Each loan under this
20 section shall be subject to such terms and conditions as
21 the Secretary deems appropriate, except that—

22 (1) the repayment period of each such loan may
23 not exceed 10 years;

24 (2) any technology investments paid for in
25 whole or in part with funds from the loan must com-

1 ply with the data standards for the interoperability
2 of health information technology systems adopted by
3 the Secretary under section 103;

4 (3) any technology investments paid for in
5 whole or in part with funds from the loan must com-
6 ply with the privacy requirements of section 102(d);
7 and

8 (4) the Secretary shall require the health infor-
9 mation infrastructure organization involved to pro-
10 vide to the Secretary an annual accounting of loan
11 funds.

12 **SEC. 105. SAFE HARBOR FOR EQUIPMENT AND SERVICES**
13 **PROVIDED FOR THE DEVELOPMENT OR IM-**
14 **PLEMENTATION OF A HEALTH INFORMATION**
15 **INFRASTRUCTURE.**

16 Paragraph (3) of section 1128B(b) of the Social Se-
17 curity Act (42 U.S.C. 1320a–7b(b)) is amended—

18 (1) by striking the period at the end of the first
19 subparagraph (H) and inserting a semicolon;

20 (2) by redesignating the second subparagraph
21 (H) as subparagraph (I);

22 (3) by striking the period at the end of sub-
23 paragraph (I) (as so redesignated) and inserting “;
24 and”; and

25 (4) by adding at the end the following:

1 “(J) the provision of any equipment or
 2 services that are appropriate for the develop-
 3 ment or implementation of a health information
 4 infrastructure under section 102 of the Quality,
 5 Efficiency, Standards, and Technology for
 6 Health Care Transformation Act of 2004, in-
 7 cluding the provision of hardware, software, and
 8 services necessary to participate in a health in-
 9 formation exchange so long as such equipment
 10 or services are not provided in any manner that
 11 takes into account the volume, or value, of re-
 12 ferrals or other business generated between the
 13 parties.”.

14 **SEC. 106. EXCEPTION TO MEDICARE LIMITATIONS ON PHY-**
 15 **SICIAN SELF-REFERRAL.**

16 Section 1877(e) of the Social Security Act (42 U.S.C.
 17 1395nn(e)) is amended by adding at the end the following
 18 new paragraph:

19 “(9) DEVELOPMENT OR IMPLEMENTATION OF A
 20 HEALTH INFORMATION INFRASTRUCTURE.—The
 21 provision of any equipment or services as appro-
 22 priate for the development or implementation of a
 23 health information infrastructure under section 102
 24 of the Quality, Efficiency, Standards, and Tech-
 25 nology for Health Care Transformation Act of 2004,

1 including the provision of hardware, software, and
 2 services necessary to participate in a health informa-
 3 tion exchange so long as such equipment or services
 4 are not provided in any manner that takes into ac-
 5 count the volume or value of referrals or other busi-
 6 ness generated between the parties.”.

7 **SEC. 107. ADJUSTMENTS TO MEDICARE PAYMENTS TO PRO-**
 8 **VIDERS OF SERVICE AND SUPPLIERS PAR-**
 9 **TICIPATING IN HEALTH INFORMATION EX-**
 10 **CHANGES.**

11 (a) IN GENERAL.—The Secretary shall establish a
 12 methodology for making adjustments in payment amounts
 13 under title XVIII of the Social Security Act (42 U.S.C.
 14 1395 et seq.) made to providers of services and suppliers
 15 who furnish items or services for which payment is made
 16 under that title who—

17 (1) participate in a health information exchange
 18 certified by the Secretary under section 103(b); or

19 (2) in the course of furnishing items and serv-
 20 ices for which payment may be made under such
 21 title, use information technology with patient-specific
 22 applications that the Secretary determines improve
 23 the quality and accuracy of clinical decision-making
 24 (such as electronic medical records and computerized
 25 physician order entry).

1 (b) ESTABLISHMENT AND MODIFICATION OF
2 CODES.—The methodology under subsection (a) shall—

3 (1) include the establishment of new codes,
4 modification of existing codes, and adjustment of
5 evaluation and management modifiers to such codes
6 that take into account the costs of acquiring, using,
7 and maintaining information technology with pa-
8 tient-specific applications; and

9 (2) take into account estimated aggregate an-
10 nual savings in overall payments under such title
11 XVIII attributable to the use of information tech-
12 nology with patient-specific applications.

13 (c) DURATION.—The Secretary may reduce or elimi-
14 nate adjustments established made to subsection (a) as
15 payment methodologies under title XVIII of the Social Se-
16 curity Act are adjusted to reflect provider quality and effi-
17 ciency.

18 (d) RULE OF CONSTRUCTION.—In making national
19 coverage determinations under section 1862(a) of the So-
20 cial Security Act (42 U.S.C. 1395y(a)) with respect to
21 maintaining information technology with patient-specific
22 applications, in determining whether the information tech-
23 nology is reasonable and necessary for the diagnosis or
24 treatment of illness or injury or to improve the functioning
25 of a malformed body member, the Secretary shall consider

1 whether the information technology improves clinical out-
2 comes or cost-effectiveness of treatment.

3 (e) DEFINITIONS.—In this section:

4 (1) PROVIDER OF SERVICES.—The term “pro-
5 vider of services” has the meaning given such term
6 under section 1861(u) of the Social Security Act (42
7 U.S.C. 1395x(u)).

8 (2) SUPPLIER.—The term “supplier” has the
9 meaning given such term under section 1861(d) of
10 such Act (42 U.S.C. 1395x(d)).

11 **SEC. 108. MEDICAID PAYMENTS FOR INFORMATION INFRA-**
12 **STRUCTURE FOR HEALTH INFORMATION EX-**
13 **CHANGE AND INFORMATION TECHNOLOGY.**

14 (a) PAYMENT.—In the case of a State that provides
15 funding under a State plan under title XIX of the Social
16 Security Act (42 U.S.C. 1396 et seq.) for the design, de-
17 velopment, and installation of information infrastructure
18 consisting of a health information exchange and informa-
19 tion technology operated by health care providers pursuant
20 to a community health information technology plan ap-
21 proved by the Secretary under section 102, the Secretary
22 shall make matching payments to States under section
23 1903(a) of such Act (42 U.S.C. 1396b(a)) for such fund-
24 ing.

1 (b) 90 PERCENT FMAP FOR PHASE I GRANTS.—In
 2 addition to payment amounts provided for in subsection
 3 (a), for calendar quarters occurring during the first three
 4 years during which a State provides funding referred to
 5 in subsection (a), the Secretary shall provide for payment
 6 to such State at the rate provided for under section
 7 1903(a)(3)(A)(i) of such Act (42 U.S.C.
 8 1396b(a)(3)(A)(i)).

9 **SEC. 109. DEFINITIONS.**

10 In this title:

11 (1) The term “health care provider” means an
 12 entity involved in consultation, prevention, diagnosis,
 13 and treatment, including but not limited to a physi-
 14 cian group, physician in individual practice, hospital,
 15 community health center, skilled nursing facility,
 16 laboratory, imaging center, or pharmacy.

17 (2) The term “health information infrastructure
 18 organization” means an organization that—

19 (A) facilitates the drafting and implemen-
 20 tation of a community health information infra-
 21 structure plan for a given geographic area in 1
 22 or more States;

23 (B) with respect to each area to be served
 24 by the organization with a grant under this sec-
 25 tion, is designated by the Governors of the

1 States involved as the exclusive health informa-
2 tion infrastructure organization for that area;
3 and

4 (C) is governed by a board that—

- 5 (i) includes representatives of health
6 care insurers and other third party payors,
7 government health care programs, employ-
8 ers, physicians and other health care pro-
9 viders, hospitals, and consumers; and
10 (ii) may include representatives of or-
11 ganized labor.

12 (3) The term “physician” has the meaning
13 given to that term in section 1861(r) of the Social
14 Security Act (42 U.S.C. 1395x(r)).

15 (4) The term “small physician group” means a
16 physician practice group of 10 or fewer physicians.

17 (5) The term “State” includes the 50 States
18 and the District of Columbia.

19 (6) The term “Working Group” means the
20 working group convened under section 103.

1 **TITLE II—HEALTH CARE OUT-**
2 **COMES, BEST PRACTICES,**
3 **AND EFFICIENCY**

4 **SEC. 201. RESEARCH ON OUTCOMES OF HEALTH CARE**
5 **ITEMS AND SERVICES.**

6 Section 1013 of the Medicare Prescription Drug, Im-
7 provement, and Modernization Act of 2003 (42 U.S.C.
8 299b–7) is amended—

9 (1) in subsection (a)—

10 (A) in clause (i) of paragraph (1)(A), by
11 inserting “cost-effectiveness,” before “compara-
12 tive clinical effectiveness,”;

13 (B) by striking paragraph (2) and insert-
14 ing the following:

15 “(2) PRIORITIES.—In carrying out this section,
16 the Secretary shall adopt and implement the prior-
17 ities established by the Consortium for Health Out-
18 comes Research Priorities under section 202 of the
19 Quality, Efficiency, Standards, and Technology for
20 Health Care Transformation Act of 2004.”; and

21 (C) in clause (i) of paragraph (3)(A), by
22 inserting “cost-effectiveness,” before “compara-
23 tive clinical effectiveness,”;

24 (2) by striking subsection (d);

1 (3) in subsection (e), by inserting
2 “\$150,000,000 for fiscal year 2005, \$250,000,000
3 for fiscal year 2006, \$400,000,000 for fiscal year
4 2007, \$750,000,000 for fiscal year 2008,
5 \$1,000,000,000 for fiscal year 2009,” before “and
6 such sums as may be necessary for each fiscal year
7 thereafter”; and

8 (4) by redesignating subsection (e) as sub-
9 section (d).

10 **SEC. 202. CONSORTIUM FOR HEALTH OUTCOMES RE-**
11 **SEARCH PRIORITIES.**

12 (a) ESTABLISHMENT.—The Director of the Agency
13 for Healthcare Research and Quality shall enter into an
14 agreement with the Institute of Medicine to establish the
15 Consortium for Health Outcomes Research Priorities.

16 (b) MEMBERS.—

17 (1) IN GENERAL.—The Consortium shall be
18 composed of the ex officio members listed in para-
19 graph (2) and the members appointed by the Insti-
20 tute of Medicine under paragraph (3).

21 (2) EX OFFICIO MEMBERS.—The ex officio
22 members of the Consortium shall include the fol-
23 lowing:

24 (A) The Administrator of the Centers for
25 Medicare and Medicaid Services.

1 (B) The Commissioner of Food and Drugs.

2 (C) The Director of the Agency for
3 Healthcare Research and Quality.

4 (D) The Director of the Centers for Dis-
5 ease Control and Prevention.

6 (E) The Director of the Indian Health
7 Service.

8 (F) The Director of the National Institutes
9 of Health.

10 (G) The Assistant Secretary of Defense for
11 Health Affairs.

12 (H) The Under Secretary for Health, De-
13 partment of Veterans Affairs.

14 (3) APPOINTED MEMBERS.—The members of
15 the Consortium appointed by the Institute of Medi-
16 cine shall include the following:

17 (A) Academics.

18 (B) Practicing physicians.

19 (C) Representatives of the following:

20 (i) Hospitals.

21 (ii) Drug companies.

22 (iii) Device companies.

23 (iv) Health care insurers, including
24 State medicaid programs under title XIX

1 of the Social Security Act (42 U.S.C. 1396
2 et seq.).

3 (v) Employers or employer groups
4 with a history of supporting health care
5 quality initiatives.

6 (vi) Patient advocacy groups.

7 (vii) Professional societies.

8 (viii) Health foundations.

9 (4) MAJORITY OF MEMBERS.—A majority of
10 the members of the Consortium shall be appointed
11 by the Institute of Medicine under paragraph (3).

12 (c) DUTIES.—The Consortium shall—

13 (1) establish research priorities under sub-
14 section (d); and

15 (2) carry out section 205 (relating to standard-
16 ized measures of health care provider performance).

17 (d) RESEARCH PRIORITIES.—

18 (1) ESTABLISHMENT.—On an annual basis, the
19 Consortium shall establish priorities for research
20 conducted or supported by the Agency for
21 Healthcare Research and Quality under section 1013
22 of the Medicare Prescription Drug, Improvement,
23 and Modernization Act of 2003 (42 U.S.C. 299b–7)
24 (relating to the effectiveness and efficiency of health
25 care items and services).

1 (2) CONSIDERATION.—In establishing research
2 priorities under subsection (c)(1), the Consortium
3 shall take into consideration—

4 (A) the extent to which health care items
5 and services—

6 (i) impact large numbers of people; or

7 (ii) impose high health care costs; and

8 (B) the extent of the need for data with re-
9 spect to diseases or conditions affected by those
10 health care items and services.

11 (3) TRANSPARENCY.—In carrying out this sec-
12 tion, the Consortium shall ensure that research pri-
13 orities are established in a manner that is publicly
14 transparent.

15 **SEC. 203. CENTER FOR CLINICAL DECISION-SUPPORT**
16 **TECHNOLOGY.**

17 (a) ESTABLISHMENT.—The Director, in collaboration
18 with the National Library of Medicine, shall establish and
19 support by grant or contract a Center for Clinical Deci-
20 sion-Support Technology to enable health care providers
21 across the United States to more efficiently and rapidly
22 embed knowledge-based elements in their clinical informa-
23 tion systems.

24 (b) DUTIES.—The Center for Clinical Decision-Sup-
25 port Technology shall—

1 (1) design and develop new approaches to
2 knowledge organization, modeling, and decision sup-
3 port;

4 (2) develop standards and promote existing
5 standards for guideline models, standard data sets,
6 vocabularies, and interfaces among components of
7 the decision-support system;

8 (3) build tools to facilitate the encoding of med-
9 ical knowledge in a structured form to enable such
10 knowledge to be used in patient-specific decision
11 support, associated with other relevant evidence, up-
12 dated and maintained, and adapted to local systems
13 and environments;

14 (4) define and regularly update methods to de-
15 termine the effectiveness of such tools, including the
16 appropriateness of the knowledge, the ease of adap-
17 tation to local environments, and the success of the
18 intended application in achieving specific goals;

19 (5) generalize or abstract the features of spe-
20 cific applications in the systems of the affiliated
21 health care delivery organizations that have been
22 found to be successful, but for which sharing and
23 dissemination are not easily achieved, due to system-
24 specific designs; and

8 SEC. 204. SCHOLARSHIPS FOR STUDY IN HEALTH CARE
9 QUALITY AND PATIENT SAFETY.

(b) SCHOLARSHIPS.—For the purposes described in subsection (a), the Director may make grants to eligible institutions for the awarding of scholarships to physicians, nurses, other health care personnel, and administrators to enable such individuals to obtain a master’s degree or a doctoral degree in the field of health care quality and patient safety.

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1 ing scholarships, will give priority to applicants whose
2 studies will focus on—

3 (1) measuring, monitoring, and improving the
4 clinical and financial performance of health care
5 service organizations; or

6 (2) providing leadership for organizational
7 change within the health care system.

8 (d) USE OF SCHOLARSHIPS.—A scholarship under
9 this section may be used to pay the costs of all reasonable
10 educational expenses, including tuition, fees, and books,
11 and such stipends as the Director determines to be appro-
12 priate.

13 (e) FLEXIBILITY.—A condition on the receipt of a
14 grant under this section is that the eligible institution will
15 offer flexibility to scholarship recipients who desire to con-
16 tinue clinical practice while pursuing a course of study,
17 including by allowing such recipients to pursue a course
18 of study on a part-time basis.

19 (f) DEFINITION.—In this section:

20 (1) The terms “accredited” and “school of pub-
21 lic health” have the meanings given to those terms
22 in section 799B of the Public Health Service Act
23 (42 U.S.C. 295p).

24 (2) The term “eligible institution” means an ac-
25 credited school of public health offering a master’s

1 degree or a doctoral degree in the field of health
 2 care quality and patient safety with a curriculum
 3 that—

4 (A) is interdisciplinary;

5 (B) includes coursework and training in—

6 (i) health services research;

7 (ii) health care quality;

8 (iii) decision analysis;

9 (iv) cost-benefit and cost-effectiveness
 10 analysis; and

11 (v) management skills and leadership;

12 and

13 (C) includes fieldwork in a health care fa-
 14 cility.

15 (g) AUTHORIZATION OF APPROPRIATIONS.—To carry
 16 out this section, there are authorized to be appropriated
 17 \$2,000,000 for fiscal year 2005 and such sums as may
 18 be necessary for each subsequent fiscal year.

19 **SEC. 205. STANDARDIZED MEASURES OF HEALTH CARE**
 20 **PROVIDER PERFORMANCE.**

21 (a) PRIORITIES.—Not later than 1 year after the date
 22 of the enactment of this Act, the Consortium shall identify
 23 priorities for developing, updating, and endorsing stand-
 24 ardized measures of health care provider performance
 25 under this section. Such priorities shall—

1 (1) first be developed for each of the 20 priority
2 areas for improvement in health care quality speci-
3 fied in the report by the Institute of Medicine enti-
4 tled “Priority Areas for National Action: Trans-
5 forming Health Care Quality”;

6 (2) include priorities for measures of health
7 care provider performance based on adherence to
8 evidence-based medicine, patient outcomes, effi-
9 ciency, and patient satisfaction;

10 (3) include priorities for measures specific to a
11 range of practice settings, including individual doc-
12 tors and small physician groups;

13 (4) emphasize the development of reliable, risk-
14 adjusted outcome measures; and

15 (5) be updated on an annual basis.

16 (b) DEVELOPMENT.—The Director shall enter into
17 agreements with medical specialty societies, private ac-
18 crediting organizations, and other appropriate organiza-
19 tions to develop and update measures of health care pro-
20 vider performance in accordance with the priorities identi-
21 fied under subsection (a).

22 (c) ENDORSEMENT.—

23 (1) IN GENERAL.—The Director shall enter into
24 an agreement with the National Quality Forum for

1 the endorsement by such entity of standardized
2 measures of health care provider performance.

3 (2) REQUIREMENTS.—The agreement entered
4 into under this subsection shall require the National
5 Quality Forum—

6 (A) to endorse standardized measures of
7 health care provider performance for each of
8 the 20 priority areas described in subsection
9 (a)(1);

10 (B) to endorse other such measures over
11 time consistent with the priorities identified
12 under subsection (a); and

13 (C) to recommend aggregate measures of
14 health care provider performance to create sim-
15 plified comparisons of health care provider per-
16 formance.

17 **SEC. 206. DEFINITIONS.**

18 In this title:

19 (1) The term “Consortium” means the Consor-
20 tium for Health Outcomes Research Priorities estab-
21 lished under section 202.

22 (2) The term “Director” means the Director of
23 the Agency for Healthcare Research and Quality.

TITLE III—INCENTIVES FOR HEALTH CARE QUALITY

SEC. 301. ACCESS TO MEDICARE HEALTH CARE CLAIMS DATABASES.

(a) ACCESS BY HEALTH PLANS.—

(1) IN GENERAL.—The Center for Medicare and Medicaid Services shall make available to a group health plan, that meets the condition under paragraph (2), all data in the possession of the Secretary with respect to the most recent claims submitted to the Secretary for items and services furnished to medicare beneficiaries for which payment is made under title XVIII of the Social Security Act.

(2) CONDITION OF ACCESS.—The condition referred to in paragraph (1) for a group health plan to have access to data under that paragraph is that the group health plan contribute claims-based health care provider performance data to the health care provider performance database established under section 303.

(b) PRIVACY PROTECTIONS.—

(1) IN GENERAL.—A request under subsection (a) is subject to the provisions of the Health Insurance Portability and Accountability Act and the Privacy Act.

1 (2) SPECIFIC PROTECTIONS.—

2 (A) ENCRYPTION.—The Secretary shall en-
3 sure that any identification number of a bene-
4 ficiary to which a claim relates is encrypted in
5 a consistent fashion in order to access data with
6 respect to that beneficiary for claims for items
7 and services under each applicable part of title
8 XVIII.

9 (B) DELETION OF PERSONAL IDENTIFYING
10 INFORMATION.—The Secretary shall ensure
11 that the data omits the name, date of birth,
12 street address and the last two applicable postal
13 codes of each of the beneficiaries.

14 (3) EXCLUSION OF CERTAIN DATA.—In the
15 case of a provider of services or a supplier that sub-
16 mits a low volume of claims to the Secretary for
17 items or services furnished to medicare beneficiaries,
18 or in the case of certain rare medical conditions or
19 treatments, the Secretary may exclude data with re-
20 spect to such claims, conditions, or treatment from
21 a request under subsection (a) in order to protect
22 patient privacy.

23 (c) FORM OF REQUEST.—Requests under subsection
24 (a) shall require such information, and be in such form,
25 as the Secretary determines appropriate. Such a request

1 shall include the applicable period and areas for which
2 such claims data is requested.

3 (d) FEE.—The Secretary may require the payment
4 of a fee by each group health plan that submits a request
5 under subsection (a) to offset administrative costs in-
6 curred by the Secretary in carrying out this section.

7 (e) AUTHORITY TO CONTRACT.—If the Secretary de-
8 termines that data could be made available more promptly,
9 the Secretary may enter into arrangements with private
10 entities to merge data for claims under each part of title
11 XVIII of the Social Security Act. The Secretary shall en-
12 sure that a unique encryption applies to each beneficiary
13 encryption.

14 **SEC. 302. INCORPORATION OF MEASURES OF HEALTH**
15 **CARE PRACTITIONER PERFORMANCE IN FED-**
16 **ERAL PROGRAMS.**

17 (a) IN GENERAL.—Not later than 1 year after the
18 date of the enactment of this Act, the Secretary of De-
19 fense, the Secretary of Health and Human Services, the
20 Secretary of Veterans Affairs, and the Director of the In-
21 dian Health Service shall incorporate, to the extent prac-
22 ticable, measures of health care practitioner performance
23 endorsed by the National Quality Forum into the health
24 care programs of the Department of Defense, the Depart-
25 ment of Health and Human Services, the Department of

1 Veterans Affairs, and the Indian Health Service, respec-
2 tively for the purpose of improving program quality and
3 efficiency.

4 (b) REPORT TO CONGRESS.—Not later than 18
5 months after the date of the enactment of this Act, each
6 Federal official specified in subsection (a) shall submit a
7 report to the Congress on the results of the official's ac-
8 tivities under this section.

9 **SEC. 303. INTERIM CLAIMS-BASED PRACTITIONER PER-**
10 **FORMANCE DATABASE.**

11 (a) IN GENERAL.—Not later than the date that is
12 18 months after the date of the enactment of this Act,
13 the Secretary shall establish a claims-based practitioner
14 performance database that comprises de-identified claims
15 data under the medicare program under title XVIII of the
16 Social Security Act and claims data from any group health
17 plan that voluntarily submits de-identified health care
18 claims data to the Secretary for such purpose.

19 (b) REQUIREMENT FOR PARTICIPATION BY FEHB
20 PLANS.—The Director of the Office of Personnel Manage-
21 ment shall require, as a condition under chapter 89 of title
22 5, United States Code, that each plan under contract with
23 the Director under such chapter submit de-identified
24 claims data to practitioner performance database.

1 (c) PERFORMANCE MEASUREMENTS.—Not later than
2 1 year after the date specified in subsection (a), and not
3 less frequently than annually thereafter, the Secretary,
4 from data in the database established under this section,
5 shall prepare practitioner performance measurements.
6 Such measurements shall—

7 (1) be based on performance measures endorsed
8 by the National Quality Forum;

9 (2) measure—

10 (A) the performance of individual physi-
11 cians, physician groups (if any), and hospitals;
12 or

13 (B) if records are not available for meas-
14 uring such performance, the performance of the
15 smallest practitioner unit for which records are
16 available; and

17 (3) be presented in such manner as the Sec-
18 retary determines will accurately and clearly rep-
19 resent the comparative performance quality and effi-
20 ciency of physicians, physician groups, and hospitals.

21 (d) PRIVACY PROTECTIONS.—The Secretary shall en-
22 sure that—

23 (1) any patient identifier is encrypted or omit-
24 ted in a consistent fashion;

1 (2) the data omits the name, date of birth,
2 street address and the last two applicable postal
3 codes of each patient; and

4 (3) the amount of the charge for services fur-
5 nished is omitted.

6 (e) REQUIREMENT FOR SUBMISSION OF DATA BY
7 ALL GROUP HEALTH PLANS.—Not later than four years
8 after the date referred to in subsection (a), each group
9 health plan shall contribute de-indentified claims data nec-
10 essary for performance measurement to the practitioner
11 performance database established under subsection (a). As
12 soon as practicable, the Secretary shall make available an-
13 nual performance measures to the public.

14 (f) TERMINATION.—Beginning on the date that is 10
15 years after the date referred to in subsection (a), the Sec-
16 retary shall discontinue the collection of data under this
17 section.

18 **SEC. 304. CLINICAL-BASED PRACTITIONER PERFORMANCE**
19 **DATABASE.**

20 (a) ESTABLISHMENT.—Not later than 18 months
21 after the date of the enactment of this Act, the Secretary
22 shall establish a practitioner performance database that
23 comprises data from any health care practitioner that vol-
24 untarily submits de-indentified health care data to the
25 Secretary for such purpose.

1 (b) PRIVACY PROTECTIONS.—The Secretary shall re-
2 quire health care practitioners to encrypt or omit all indi-
3 vidually identifiable patient information from data sub-
4 mitted to the Secretary under this section, including by
5 ensuring that—

6 (1) any patient identifier is encrypted or omit-
7 ted in a consistent fashion;

8 (2) the data omits the name, date of birth,
9 street address, and the last 2 applicable postal codes
10 of each patient; and

11 (3) the amount of the charge for services fur-
12 nished is omitted.

13 (c) PERFORMANCE MEASUREMENTS.—Not later than
14 1 year after the date specified in subsection (a), and not
15 less frequently than annually thereafter, the Secretary,
16 from data in the database established under this section,
17 shall prepare practitioner performance measurements.
18 Such measurements shall—

19 (1) be based on performance measures endorsed
20 by the National Quality Forum;

21 (2) measure—

22 (A) the performance of individual physi-
23 cians, physician groups (if any), and hospitals;
24 or

1 (B) if records are not available for meas-
 2 uring such performance, the performance of the
 3 smallest practitioner unit for which records are
 4 available; and

5 (3) be presented in such manner as the Sec-
 6 retary determines will accurately and clearly rep-
 7 resent the comparative performance quality and effi-
 8 ciency of physicians, physician groups, and hospitals.

9 (d) CERTAIN PRACTITIONERS.—As a condition on
 10 any grant or subgrant awarded to a health information
 11 infrastructure organization under section 102, the Sec-
 12 retary shall require the organization to agree that the or-
 13 ganization will not allow any health care practitioner to
 14 participate in a health information exchange established
 15 or implemented with the grant unless the practitioner sub-
 16 mits claims data to the Secretary in accordance with this
 17 section.

18 **SEC. 305. AVAILABILITY OF PERFORMANCE MEASURE-**
 19 **MENTS AND DATA.**

20 (a) PERFORMANCE MEASURES.—The Secretary shall
 21 make publicly available the practitioner performance
 22 measurements prepared under sections 303 and 304.

23 (b) DATA.—The Secretary shall restrict access to the
 24 data in the databases under sections 303 and 304 to indi-
 25 viduals requesting such information in connection with re-

1 search conducted or supported by the Agency for
2 Healthcare Research and Quality.

3 **SEC. 306. USE OF HEALTH CARE PROVIDER PERFORM-**
4 **ANCES MEASURE FOR PAY FOR PERFORM-**
5 **ANCE.**

6 (a) IN GENERAL.—The Secretary may provide for
7 adjustments to payment systems under title XVIII of the
8 Social Security Act based on performance measurements
9 of physicians, physician groups, and institutional providers
10 of services. Insofar as the Secretary exercises the author-
11 ity under the preceding sentence, in the case of providers
12 with both claims-based and clinical-based measurements,
13 the Secretary shall use the clinical-based measurements
14 for any pay-for-performance unless the provider elects to
15 use claims-based measurements. In no case may an elec-
16 tion under the preceding sentence be in effect after the
17 date that is 6 years after the date of the enactment of
18 this Act.

19 (b) MEDPAC RECOMMENDATIONS.—The Medicare
20 Payment Advisory Commission shall include in the March
21 2007 report to Congress, and annually thereafter, specific
22 recommendations for the amount of adjustments to pay-
23 ment systems and beneficiary cost-sharing under title
24 XVIII of the Social Security Act based on performance
25 measurements in order to share savings under such title

1 attributable to quality improvement with practitioners, to
2 create incentives for better practitioner performance, and
3 shift medicare beneficiary caseload to higher quality, more
4 efficient practitioners.

5 (c) SENSE OF CONGRESS.—It is the sense of the Con-
6 gress that the Director of the Office of Personnel Manage-
7 ment should encourage plans with contracts under chapter
8 89 of title 5, United States Code, to include differential
9 payments, differential cost-sharing, or both based on HHS
10 practitioner performance measurements under section
11 303.

12 **SEC. 307. STUDY COMPARING PRACTITIONER PERFORM-**
13 **ANCE DATABASE.**

14 Not later than 54 months after the date of the enact-
15 ment of this Act, the Director of the Agency for
16 Healthcare Research and Quality shall—

- 17 (1) conduct a study to compare the interim
18 claims-based practitioner performance database es-
19 tablished under section 303 with the clinical-based
20 practitioner performance database established under
21 section 304, including by assessing the scope, cause,
22 and import of any differences between the 2 data-
23 bases in practitioner performance measurement; and
24 (2) submit a report to the Congress on the re-
25 sults of the study.

1 **SEC. 308. REGULATIONS ON AUDITING.**

2 The Secretary shall establish regulations governing
3 the audit of group health plans that submit data under
4 section 303 and health care practitioners that submit data
5 under section 304 for compliance with such sections.

6 **SEC. 309. AHRQ ACCESS TO PRACTITIONER PERFORMANCE**
7 **DATABASES.**

8 The Director of the Agency for Healthcare Research
9 and Quality shall have access to the data in the databases
10 established under sections 303 and 304 for health out-
11 comes research, including research conducted internally or
12 by external researchers.

○